

What Is Claimed Is:

1. An aqueous polymer composition reaction product produced by reacting in an emulsion polymerization reaction a mixture comprising:
  - (a) about 5.0% to about 60.0% by total weight of the mixture of a member selected from the group consisting of water-dispersible polymers having an average molecular weight in the range of about 2,000 to about 12,000 and combinations thereof;
  - (b) about 2.0% to about 30.0% by total weight of the mixture of a member selected from the group consisting of fatty acids having an acid number of at least 100 and combinations thereof;
  - (c) about 20.0% to about 93.0% by total weight of the mixture of a member selected from the group consisting of vinylic monomers and combinations thereof;
  - (d) up to about 3.0% by total weight of the mixture of a chain transfer agent;
  - (e) up to about 5.0% by total weight of the mixture of a surfactant selected from the group consisting of nonionic surfactants, anionic surfactants, and combinations thereof;
  - (f) a catalytic amount of at least one polymerization initiator; and
  - (g) the balance of the mixture being water; to produce the polymer composition.

2. The polymer composition of claim 1 which further comprises the reaction product produced by reacting in an emulsion polymerization reaction a mixture comprising:
- (a) about 10.0% to about 30.0% by total weight of the mixture of a member selected from the group consisting of water-dispersible polymers having an average molecular weight in the range of about 5,000 to about 11,000 and combinations thereof;
- (b) about 4.0% to about 20.0% by total weight of the mixture of a member selected from the group consisting of fatty acids having an acid number of at least 100 and combinations thereof;
- (c) about 50.0% to about 86.0% by total weight of the mixture of a member selected from the group consisting of vinylic monomers and combinations thereof;
- (d) up to about 2.0% by total weight of the mixture of a chain transfer agent;
- (e) up to about 4.0% by total weight of the mixture of a surfactant selected from the group consisting of nonionic surfactants, anionic surfactants, and combinations thereof;
- (f) a catalytic amount of at least one polymerization initiator; and
- (g) the balance of the mixture being water; to produce the polymer composition.
3. The polymer composition of claim 1 wherein the water-dispersible polymer is a member selected from the group consisting of acrylic acid, methacrylic acid, fumaric acid, maleic anhydride, and combinations thereof.
4. The polymer composition of claim 1 wherein the fatty acid is a member selected from the group consisting of fatty acids containing from 12 to 24 carbon atoms and combinations thereof.
5. The polymer composition of claim 1 wherein the vinylic monomer is a member selected from the group consisting of styrenic monomers, acrylic monomers, methacrylic monomers, ethylenic monomers, and combinations thereof.

6. The polymer composition of claim 1 wherein the vinylic monomer is a member selected from the group consisting of acrylic acid, methacrylic acid, methyl methacrylate, ethyl methacrylate, n-propyl methacrylate, n-butyl methacrylate, isopropyl methacrylate, isobutyl methacrylate, n-amyl methacrylate, n-hexyl methacrylate, isoamyl methacrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl methacrylate, N,N-dimethylaminoethyl methacrylate, N,N-diethylaminoethyl methacrylate, t-butylaminoethyl methacrylate, 2-sulfoethyl methacrylate, trifluoroethyl methacrylate, glycidyl methacrylate, benzyl methacrylate, allyl methacrylate, 2-n-butoxyethyl methacrylate, 2-chloroethyl methacrylate, sec-butyl-methacrylate, tert-butyl methacrylate, 2-ethybutyl methacrylate, cinnamyl methacrylate, crotyl methacrylate, cyclohexyl methacrylate, cyclopentyl methacrylate, 2-ethoxyethyl methacrylate, furfuryl methacrylate, hexafluoroisopropyl methacrylate, methallyl methacrylate, 3-methoxybutyl methacrylate, 2-methoxybutyl methacrylate, 2-nitro-2 methylpropyl methacrylate, n-octylmethacrylate, 2-ethylhexyl methacrylate, 2-phenoxyethyl methacrylate, 2-phenylethyl methacrylate, phenyl methacrylate, propargyl methacrylate, tetrahydrofurfuryl methacrylate, tetrahydropyranyl methacrylate, methyl acrylate, ethyl acrylate, n-propyl acrylate, isopropyl acrylate, n-butyl acrylate, n-decyl acrylate, 2-ethylhexyl acrylate, salts of methacrylic acid, methacrylonitrile, methacrylamide, N-methylmethacrylamide, N-ethylmethacrylamide, N,N-diethylmethacrylamide, N,N-dimethylmethacrylamide, N-phenyl-methacrylamide, methacrolein, salts of acrylic acid, acrylonitrile, acrylamide, methyl alpha-chloroacrylate, methyl 2-cyanoacrylate, N-ethylacrylamide, N,N-diethylacrylamide acrolein, vinyl acetate, vinyl chloride, vinyl pyridine, vinyl pyrrolidone, sodium crotonate, methyl crotonate, crotonic acid, maleic anhydride, and combinations thereof.

7. The polymer composition of claim 1 wherein the chain transfer agent is a member selected from the group consisting of dodecyl mercaptan, mercaptoacetic acid, mercaptopropionic acid, octyl mercaptan, 2-mercaptoethanol, alkyl mercaptopropionates, and combinations thereof.

8. The polymer composition of claim 1 wherein the nonionic surfactant is a member selected from the group consisting of ethoxylated alkylphenols, ethoxylated fatty alcohols, ethylene oxide/propylene oxide block copolymers, and combinations thereof.
- 5 9. The polymer composition of claim 1 wherein the anionic surfactant is a member selected from the group consisting of alkyl sulfates, ether sulfates, phosphate esters, sulfonates, and combinations thereof.
- 10 10. The polymer composition of claim 1 wherein the polymerization initiator comprises from about 0.5% to about 5.0% by total weight of the mixture and is a member selected from the group consisting of thermal initiators, redox initiators, and combinations thereof.
- 15 11. The polymer composition of claim 10 wherein the thermal initiator is a member selected from the group consisting of hydrogen peroxide, t-butyl hydroperoxide, di-t-butyl peroxide, benzoyl peroxide, benzoyl hydroperoxide, 2,4-dichlorobenzoyl peroxide, t-butyl peracetate, azobisisobutyronitrile, isopropyl peroxy carbonate, and combinations thereof.
- 20 12. The polymer composition of claim 10 wherein the redox initiator is a member selected from the group consisting of cumene hydroperoxide-sodium metabisulfite, cumene hydroperoxide-iron (II) sulfate, and combinations thereof.
13. A moisture barrier coating composition comprising the polymer composition of claim 1.
- 25 14. A water resistant coating composition comprising the polymer composition of claim 1.
15. A grease resistant coating composition comprising the polymer composition of claim 1.

16. A chemical resistant coating composition comprising the polymer composition of claim 1.

17. An aqueous sealant comprising the polymer composition of claim 1.

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18. An aqueous paint comprising the aqueous sealant of claim 1 and pigment.